

# PATENT SPECIFICATION

(11) 1 222 648

DRAWINGS ATTACHED

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## (54) HOLDER FOR WINDSHIELD WIPER BLADE

(71) I, EDWARD RICKETT, a citizen of the United States of America, of 4612 North Chatsworth Street, St. Paul, Minnesota, United States of America, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to a holder for windshield wiper blades.

Vehicle windshield wipers, generally, consist of a resilient (usually rubber) blade, a backing for the blade to hold it laterally rigid, and a support for the blade and backing which is attached to an oscillating arm driven by a motor mounted on the vehicle. The rubber blade deteriorates rapidly because of the lengthy exposure to the elements, particularly sunlight and hydrocarbon residue precipitating onto the windshield from the air, and replacement should be accomplished frequently. Some wiper systems require replacement of the blade, the backing and support, while others require replacement of only the blade or the blade and backing. In an ideal system, only the blade is replaced, and since it is less expensive to replace only the blade, it is then economically feasible to replace the blade more frequently. Additionally, the replacement should be simple with a minimum of tools and time required for the replacement, which aids the reduction of the cost of the replacement.

According to the present invention there is provided a holder for a windscreen wiper blade comprising a pair of metal ribbons for positioning in spaced parallel coplanar relationship on the two sides of a wiper blade, and a U-shaped spring clip for mounting over and connecting one or each pair of adjacent ends of the ribbons when in the said relationship, the clip and the said end of each ribbon being adapted to be connected by means of a protuberance engaging in an aperture or recess.

Preferably, the clip comprises a spring steel U-shaped body, the two legs of which

normally converge towards a point spaced from the ends thereof, the end portion of at least one leg being turned away from the other leg to form a mouth, and at least one leg being apertured. Such a clip forms the subject of my Application No. 11223/70 (Serial No. 1,222,649), divided herefrom.

One embodiment of the invention will now be described, by way of example, with reference to the accompanying drawing, in which:

Fig. 1 is a perspective view, broken away at the middle, of a resilient windshield wiper blade carried by a holder embodying the invention;

Fig. 2 is a top plan view of steel ribbons forming a portion of the holder of Fig. 1;

Fig. 3 is a fragmentary side elevational view of the end of a metal ribbon of the holder of Fig. 1 illustrating the embossed protuberance thereon;

Fig. 4 is an end elevational view of a clip of the holder of Fig. 1; and

Fig. 5 is a developed top plan of the clip of Fig. 4 prior to being formed into its U-shape, and illustrating the bend lines thereon.

Fig. 1 shows a holder mounted on a flexible, resilient windshield wiper blade. The blade may be considered typical of various types which utilize a removable backing formed of metal ribbons. The blade includes a rubber body 10 having a wiping edge 12, a lateral flange 14 mounted on a thin neck section 16 which joins the body 10 opposite the wiping edge 12, and a top flange portion 18 mounted on a thin neck section 20 secured to the flange 14. The flanges 14 and 18 form therebetween a pair of opposed grooves or slots 22 and 24 which extend longitudinally along the blade. A spring steel ribbon 32 is placed in one of the slots and a spring steel ribbon 34 is placed in the opposite slot, so that the ribbons are in spaced side-by-side relation on opposed sides of the blade. The ribbons are held together by a spring clip 33. The elongated ribbons extend slightly beyond the ends of the rubber blade to accommodate the spring clips at each end. The metal ribbons are

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embossed adjacent each end to provide bulges or protuberances 32a, 32b, 34a and 34b. As shown in Fig. 3, an indentation 34c is formed on one side of the ribbon leaving the bulge or protuberance 34a on the opposite side. The bulges or bosses are formed adjacent the ends and approximately centerwise of the ribbons so that the ribbons are reversible on the blade, that is, may be used on either side.

The ribbons 32 and 34 together with the snap clips 33 form a holder or backing system for the replaceable wiper blade, the holder being mounted by a support system on a motor-driven oscillating arm.

Each of the clips 33 is a U-shaped piece of spring steel having an aperture in one leg of the U. One leg 36 of the U is approximately flat and terminates in a reverse bend 37 of a relatively large radius of curvature which places the opposite leg 38 back along the first leg 36 at a slight angle converging on the lower leg towards a point beyond the ends of the legs. The edge 39 of the leg 38 is turned up slightly to form a mouth to permit easy entrance of the ends of the ribbons into the clip. A cut-out section 40 on the leg 38 accommodates the bulges or dimples on the ribbons 32 and 34 so that the clip is securely held on the ribbons. The width of the clip is slightly wider than twice the width of one ribbon, which permits two ribbons secured with the clips to encompass the neck 20 of the rubber blade and be fairly loose thereon. The aperture 40 is sufficiently large to permit the ribbons 32 and 34 to move a limited distance apart and be retained on the clip. The thickness of the ribbon is less than the width of the slot 22 since it is desired that the ribbon be sloppy in the slot to permit the blade free flexible action while being held laterally rigid. As shown in the developed view of Fig. 5, a flat piece of spring steel is initially punched to form the opening 40. The lip 39 is turned up along a bend line 39a. The member is then formed into a U-shaped configuration by folding it back along itself at the three fold lines 37a in approximately the middle of the clip to provide a rounded configuration for the bend.

The holder or backing may be easily fixed to the blade by inserting the ribbons into the slots on the blade, holding the ribbons together against the neck 20 and then pushing a clip over each end of the ribbon so that the protuberances enter the aperture in the clip. The clips, being spring steel, and having their legs in close proximity to one another, are held securely by the protuber-

ances in their openings. A clip is placed on each end of the pair of ribbons and the blade is then ready to be inserted into the blade support which is mounted on the oscillating arm of the wiper assembly. The arrangement provides freedom of action of the resilient blade and permits it to flex longitudinally so that it can conform to the windshield curvature. The blade is held against bending laterally, and it is free to flop over at the end of each wiping stroke.

#### WHAT I CLAIM IS:—

1. A holder for a windscreen wiper blade comprising a pair of metal ribbons for positioning in spaced parallel coplanar relationship on the two sides of a wiper blade, and a U-shaped spring clip for mounting over and connecting one or each pair of adjacent ends of the ribbons when in the said relationship, the clip and the said end of each ribbon being adapted to be connected by means of a protuberance engaging in an aperture or recess.

2. A holder according to claim 1 wherein the protuberances are embossed in the metal ribbons and the clip is apertured to receive the protuberances.

3. A holder according to claim 1 or 2 wherein the protuberances are formed midway between the sides of the ribbons.

4. A holder according to claim 1, 2 or 3, provided with a flexible resilient wiper blade having a body portion including a wiping edge and flange portions on the sides of the body portion forming two opposed slots running the length of the blade, the ribbons being retained in the slots by the clip.

5. A holder according to claim 1, 2, 3 or 4, wherein the clip comprises a spring steel U-shaped body, the two legs of which normally converge towards a point spaced from the ends thereof, the end portion of at least one leg being turned away from the other leg to form a mouth, and at least one leg being apertured.

6. A holder for a windscreen wiper blade constructed and arranged substantially as herein described with reference to and as shown in the accompanying drawing.

7. A windscreen wiper assembly comprising a holder according to any of the preceding claims.

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COMPLETE SPECIFICATION

1 SHEET

This drawing is a reproduction of the Original on a reduced scale

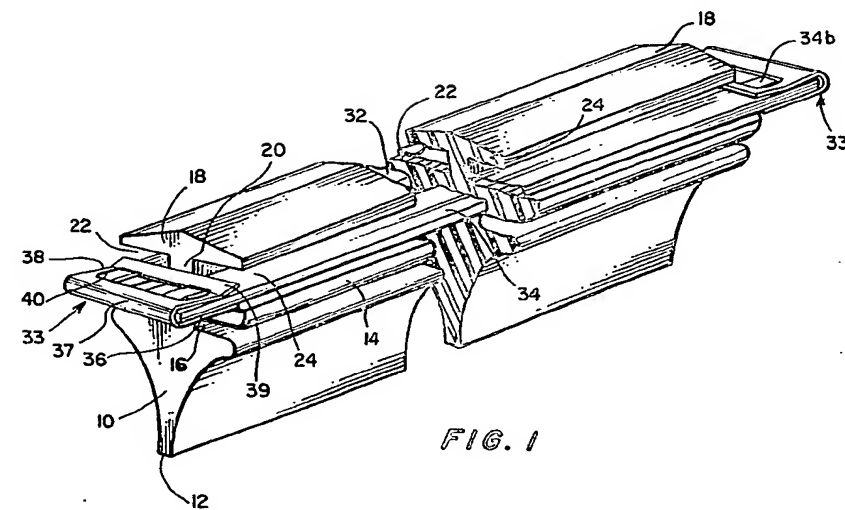


FIG. 1

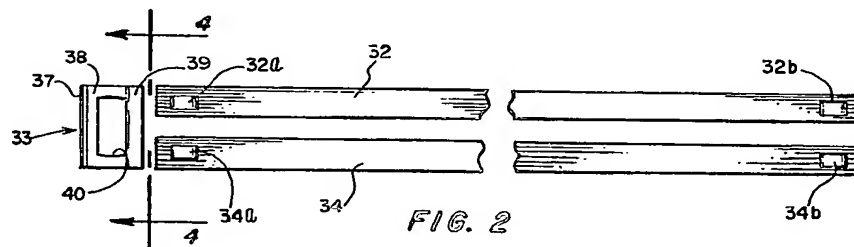


FIG. 2

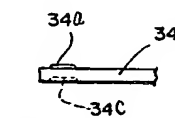


FIG. 3

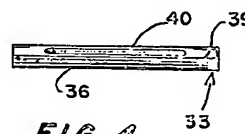


FIG. 4

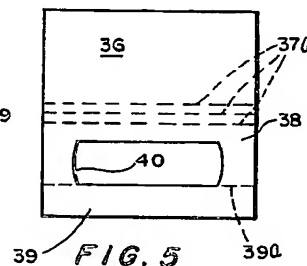


FIG. 5

